

CLAIMS

What is claimed is:

1 1. A method comprising:
2 receiving a line of text, the line of text having a set of ordered characters;
3 flipping the characters of the line of text about a display axis;
4 identifying a set of runs of foreign characters in the line of text; and
5 flipping the characters of the runs of the set of runs of foreign characters within
6 each run of foreign characters.

1 2. The method of claim 1 further comprising:
2 receiving a block of text;
3 breaking the block of text into a set of lines of text; and
4 performing the receiving the line of text, flipping the characters of the line,
5 identifying and flipping the characters of the runs for each line of text of the set of lines
6 of text.

1 3. The method of claim 2 further comprising:
2 passing the line of text to a native operating system for display.

1 4. The method of claim 1 wherein:
2 the text is received from an application with no capability of handling bi-
3 directional text.

1 5. The method of claim 1 wherein:
2 the foreign text is defined as text which should be displayed in a left-to-right
3 fashion.

1 6. The method of claim 1 wherein:
2 the foreign text is defined as text which should be displayed in a right-to-left
3 fashion.

1 7. A machine-readable medium embodying instructions, which, when executed
2 by a processor, cause the processor to perform a method, the method comprising:
3 receiving a line of text, the line of text having a set of ordered characters;
4 flipping the characters of the line of text about a display axis;
5 identifying a set of runs of foreign characters in the line of text; and
6 flipping the characters of the runs of the set of runs of foreign characters within
7 each run of foreign characters.

1 8. The machine readable medium of claim 7 further embodying instructions
2 which when executed by a processor, cause the processor to perform the method
3 further comprising:
4 receiving a block of text;
5 breaking the block of text into a set of lines of text; and
6 performing the receiving the line of text, flipping the characters of the line,
7 identifying and flipping the characters of the runs for each line of text of the set of lines
8 of text.

1 9. The machine readable medium of claim 7 further embodying instructions
2 which when executed by a processor, cause the processor to perform the method
3 further comprising:
4 passing the line of text to a native operating system for display.

1 10. A processor which executes instructions causing the processor to perform
2 the method comprising:
3 receiving a line of text, the line of text having a set of ordered characters;
4 flipping the characters of the line of text about a display axis;
5 identifying a set of runs of foreign characters in the line of text; and
6 flipping the characters of the runs of the set of runs of foreign characters within
7 each run of foreign characters.

1 11. The processor of claim 10 wherein the method further comprises:
2 receiving a block of text;
3 breaking the block of text into a set of lines of text; and
4 performing the receiving the line of text, flipping the characters of the line,
5 identifying and flipping the characters of the runs for each line of text of the set of lines
6 of text.

1 12. The processor of claim 11 wherein the method further comprises:
2 passing the line of text to a native operating system for display.

1 13. A server configured to send instructions to a remote client, to configure the
2 remote client to perform the method comprising:

3 receiving a line of text, the line of text having a set of ordered characters;
4 flipping the characters of the line of text about a display axis;
5 identifying a set of runs of foreign characters in the line of text; and
6 flipping the characters of the runs of the set of runs of foreign characters within
7 each run of foreign characters.

1 14. The server of claim 13 wherein the server is configured to send instructions
2 to the client to configure the client to perform the method further comprising:
3 receiving a block of text;
4 breaking the block of text into a set of lines of text; and
5 performing the receiving the line of text, flipping the characters of the line,
6 identifying and flipping the characters of the runs for each line of text of the set of lines
7 of text.

11234567891011121314151617181920212223242526272829303132333435363738394041424344454647484950515253545556575859606162636465666768697071727374757677787980818283848586878889909192939495969798991001011021031041051061071081091101111121131141151161171181191201211221231241251261271281291301311321331341351361371381391401411421431441451461471481491501511521531541551561571581591601611621631641651661671681691701711721731741751761771781791801811821831841851861871881891901911921931941951961971981992002012022032042052062072082092102112122132142152162172182192202212222232242252262272282292302312322332342352362372382392402412422432442452462472482492502512522532542552562572582592602612622632642652662672682692702712722732742752762772782792802812822832842852862872882892902912922932942952962972982993003013023033043053063073083093103113123133143153163173183193203213223233243253263273283293303313323333343353363373383393403413423433443453463473483493503513523533543553563573583593603613623633643653663673683693703713723733743753763773783793803813823833843853863873883893903913923933943953963973983994004014024034044054064074084094104114124134144154164174184194204214224234244254264274284294304314324334344354364374384394404414424434444454464474484494504514524534544554564574584594604614624634644654664674684694704714724734744754764774784794804814824834844854864874884894904914924934944954964974984995005015025035045055065075085095105115125135145155165175185195205215225235245255265275285295305315325335345355365375385395405415425435445455465475485495505515525535545555565575585595605615625635645655665675685695705715725735745755765775785795805815825835845855865875885895905915925935945955965975985996006016026036046056066076086096106116126136146156166176186196206216226236246256266276286296306316326336346356366376386396406416426436446456466476486496506516526536546556566576586596606616626636646656666676686696706716726736746756766776786796806816826836846856866876886896906916926936946956966976986997007017027037047057067077087097107117127137147157167177187197207217227237247257267277287297307317327337347357367377387397407417427437447457467477487497507517527537547557567577587597607617627637647657667677687697707717727737747757767777787797807817827837847857867877887897907917927937947957967977987998008018028038048058068078088098108118128138148158168178188198208218228238248258268278288298308318328338348358368378388398408418428438448458468478488498508518528538548558568578588598608618628638648658668678688698708718728738748758768778788798808818828838848858868878888898908918928938948958968978988999009019029039049059069079089099109119129139149159169179189199209219229239249259269279289299309319329339349359369379389399409419429439449459469479489499509519529539549559569579589599609619629639649659669679689699709719729739749759769779789799809819829839849859869879889899909919929939949959969979989991000100110021003100410051006100710081009101010111012101310141015101610171018101910201021102210231024102510261027102810291030103110321033103410351036103710381039104010411042104310441045104610471048104910501051105210531054105510561057105810591060106110621063106410651066106710681069107010711072107310741075107610771078107910801081108210831084108510861087108810891090109110921093109410951096109710981099110011011102110311041105110611071108110911101111111211131114111511161117111811191120112111221123112411251126112711281129113011311132113311341135113611371138113911401141114211431144114511461147114811491150115111521153115411551156115711581159116011611162116311641165116611671168116911701171117211731174117511761177117811791180118111821183118411851186118711881189119011911192119311941195119611971198119912001201120212031204120512061207120812091210121112121213121412151216121712181219122012211222122312241225122612271228122912301231123212331234123512361237123812391240124112421243124412451246124712481249125012511252125312541255125612571258125912601261126212631264126512661267126812691270127112721273127412751276127712781279128012811282128312841285128612871288128912901291129212931294129512961297129812991300130113021303130413051306130713081309131013111312131313141315131613171318131913201321132213231324132513261327132813291330133113321333133413351336133713381339134013411342134313441345134613471348134913501351135213531354135513561357135813591360136113621363136413651366136713681369137013711372137313741375137613771378137913801381138213831384138513861387138813891390139113921393139413951396139713981399140014011402140314041405140614071408140914101411141214131414141514161417141814191420142114221423142414251426142714281429143014311432143314341435143614371438143914401441144214431444144514461447144814491450145114521453145414551456145714581459146014611462146314641465146614671468146914701471147214731474147514761477147814791480148114821483148414851486148714881489149014911492149314941495149614971498149915001501150215031504150515061507150815091510151115121513151415151516151715181519152015211522152315241525152615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77277827792780278127822783278427852786278727882789279027912792279327942795279627972798279928002801280228032804280528062807280828092810281128122813281428152816281728182819282028212822282328242825282628272828282928302831283228332834283528362837283828392840284128422843284428452846284728482849285028512852285328542855285628572858285928602861286228632864286528662867286828692870287128722873287428752876287728782879288028812882288328842885288628872888288928902891289228932894289528962897289828992900290129022903290429052906290729082909291029112912291329142915291629172918291929202921292229232924292529262927292829292930293129322933293429352936293729382939294029412942294329442945294629472948294929502951295229532954295529562957295829592960296129622963296429652966296729682969297029712972297329742975297629772978297929802981298229832984298529862987298829892990299129922993299429952996299729982999300030013002300330043005300630073008300930103011301230133014301530163017301830193020302130223023302430253026302730283029303030313032303330343035303630373038303930403041304230433044304530463047304830493050305130523053305430553056305730583059306030613062306330643065306630673068306930703071307230733074307530763077307830793080308130823083308430853086308730883089309030913092309330943095309630973098309931003101310231033104310531063107310831093110311131123113311431153116311731183119312031213122312331243125312631273128312931303131313231333134313531363137313831393140314131423143314431453146314731483149315031513152315331543155315631573158315931603161316231633164316531663167316831693170317131723173317431753176317731783179318031813182318331843185318631873188318931903191319231933194319531963197319831993200320132023203320432053206320732083209321032113212321332143215321632173218321932203221322232233223432253226322732283229323032313232323332343235323632373238323932403241324232433244324532463247324832493250325132523253325432553256325732583259326032613262326332643265326632673268326932703271327232733274327532763277327832793280328132823283328432853286328732883289329032913292329332943295329632973298329933003301330233033304330533063307330833093310331133123313331433153316331733183

1 18. A server configured to download information to a client, the information
2 including a set of instructions, the instructions for execution by a processor of the client,
3 the set of instructions causing the processor to perform a method, the method
4 comprising:

5 receiving a line of text, the line of text having a set of ordered characters;
6 flipping the characters of the line of text about a display axis;
7 identifying a set of runs of foreign characters in the line of text; and
8 flipping the characters of the runs of the set of runs of foreign characters within
9 each run of foreign characters.

1 19. The server of claim 18 wherein the set of instructions cause the processor to
2 perform the method further comprising:

3 receiving a block of text;
4 breaking the block of text into a set of lines of text; and
5 performing the receiving the line of text, flipping the characters of the line,
6 identifying and flipping the characters of the runs for each line of text of the set of lines
7 of text.

1 20. The server of claim 19 wherein the set of instructions cause the processor to
2 perform the method further comprising:

3 passing the line of text to a native operating system for display.

1 21. The server of claim 20 wherein the client is a remote mobile device.

1 22. The server of claim 20 wherein the client is a wireless device.

1 *sub A* 23. A method comprising:

2 receiving a line of text, the line of text having a set of ordered characters;

3 generating a set of runs within the line of text;

4 flipping a location and an orientation of each run of the set of runs about an axis
5 of a display; and

6 identifying a set of runs of foreign characters within the line of text.

1 24. The method of claim 23 further comprising:

2 flipping the orientation of each run of foreign characters within the run of foreign
3 characters.

1 25. The method of claim 23 further comprising:

2 rendering each run of the set of runs, except for the runs of foreign characters, in
3 a first orientation; and

4 rendering each run of foreign characters in a second orientation.

1 26. The method of claim 25 further comprising:
2 receiving a block of text having a set of ordered characters and a location; and
3 breaking the block of text into a set of lines of text, each line having a set of
4 ordered characters and a location.

1 27. The method of claim 26 wherein:
2 the text is received from an application with no capability of handling bi-
3 directional text.

1 28. The method of claim 27 wherein:
2 the foreign text is defined as text which should be displayed in a left-to-right
3 fashion.

1 29. The method of claim 27 wherein:
2 the foreign text is defined as text which should be displayed in a right-to-left
3 fashion.

1 30. A machine-readable medium embodying instructions, which, when executed
2 by a processor, cause the processor to perform a method, the method comprising:
3 receiving a line of text, the line of text having a set of ordered characters;
4 generating a set of runs within the line of text;
5 flipping a location and an orientation of each run of the set of runs about an axis
6 of a display; and
7 identifying a set of runs of foreign characters within the line of text.

1 31. The machine readable medium of claim 30 further embodying instructions
2 which when executed by a processor, cause the processor to perform the method
3 further comprising:
4 flipping the orientation of each run of foreign characters within the run of foreign
5 characters.

1 32. The machine readable medium of claim 30 further embodying instructions
2 which when executed by a processor, cause the processor to perform the method
3 further comprising:
4 rendering each run of the set of runs, except for the runs of foreign characters, in
5 a first orientation; and
6 rendering each run of foreign characters in a second orientation.

1 33. The machine readable medium of claim 32 further embodying instructions
2 which when executed by a processor, cause the processor to perform the method
3 further comprising:
4 receiving a block of text having a set of ordered characters and a location; and
5 breaking the block of text into a set of lines of text, each line having a set of
6 ordered characters and a location.

1 34. A processor which executes instructions causing the processor to perform
2 the method comprising:
3 receiving a line of text, the line of text having a set of ordered characters;
4 generating a set of runs within the line of text;
5 flipping a location and an orientation of each run of the set of runs about an axis
6 of a display; and
7 identifying a set of runs of foreign characters within the line of text.

1 35. The processor of claim 34 wherein the method further comprises:
2 flipping the orientation of each run of foreign characters within the run of foreign
3 characters.

1 36. The processor of claim 34 wherein the method further comprises:
2 rendering each run of the set of runs, except for the runs of foreign characters, in
3 a first orientation; and
4 rendering each run of foreign characters in a second orientation.

1 37. The processor of claim 36 wherein the method further comprises:
2 receiving a block of text having a set of ordered characters and a location; and
3 breaking the block of text into a set of lines of text, each line having a set of
4 ordered characters and a location.

1 38. A server configured to send instructions to a remote client, to configure the
2 remote client to perform the method comprising:
3 receiving a line of text, the line of text having a set of ordered characters;
4 generating a set of runs within the line of text;
5 flipping a location and an orientation of each run of the set of runs about an axis
6 of a display; and
7 identifying a set of runs of foreign characters within the line of text.

1 39. The server of claim 38 wherein the server is configured to send instructions
2 to the client to configure the client to perform the method further comprising:
3 flipping the orientation of each run of foreign characters within the run of foreign
4 characters.

1 40. The server of claim 38 wherein the server is configured to send instructions
2 to the client to configure the client to perform the method further comprising:
3 rendering each run of the set of runs, except for the runs of foreign characters, in
4 a first orientation; and
5 rendering each run of foreign characters in a second orientation.

1 41. The server of claim 40 wherein the server is configured to send instructions
2 to the client to configure the client to perform the method further comprising:
3 receiving a block of text having a set of ordered characters and a location; and
4 breaking the block of text into a set of lines of text, each line having a set of
5 ordered characters and a location.

1 42. The server of claim 41 wherein the client is a remote mobile device.

1 43. The server of claim 41 wherein the client is a wireless device.

1 44. A server configured to download information to a client, the information
2 including a set of instructions, the instructions for execution by a processor of the client,
3 the set of instructions causing the processor to perform a method, the method
4 comprising:
5 receiving a line of text, the line of text having a set of ordered characters;
6 generating a set of runs within the line of text;
7 flipping a location and an orientation of each run of the set of runs about an axis
8 of a display; and
9 identifying a set of runs of foreign characters within the line of text.

1 45. The server of claim 44 wherein the set of instructions cause the processor to
2 perform the method further comprising:
3 flipping the orientation of each run of foreign characters within the run of foreign
4 characters.

1 46. The server of claim 44 wherein the set of instructions cause the processor to
2 perform the method further comprising:
3 rendering each run of the set of runs, except for the runs of foreign characters, in
4 a first orientation; and
5 rendering each run of foreign characters in a second orientation.

1 47. The server of claim 46 wherein the set of instructions cause the processor to
2 perform the method further comprising:

3 receiving a block of text having a set of ordered characters and a location; and
4 breaking the block of text into a set of lines of text, each line having a set of
5 ordered characters and a location.

1 48. The server of claim 47 wherein the client is a remote mobile device.

1 49. The server of claim 47 wherein the client is a wireless device.

1 50. A method comprising:
2 receiving a line of text, the line of text having a set of ordered characters;
3 flipping the characters of the line of text within the line of text about a center
4 vertical axis of a display;
5 identifying a set of runs of foreign characters in the line of text; and
6 flipping the characters within each run of foreign characters about a center
7 vertical axis of each run of foreign characters.

